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The measurement of financial intermediation in Japan

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The measurement of financial intermediation in Japan

Abstract: In this paper, we compute financial intermediation ratios for Japan (1970-2003) on a book value basis. According to our results, the intermediation ratio has remained quite stable, at around 85%. However, this stability is the result of two opposing trends: a decrease in credits and an increase in financial securities owned by financial (mostly, non banking) institutions. These two opposing trends would not have appeared if we had used traditional indicators computed as a fraction on GDP, or that build on a narrow definition of intermediation or use market value data. Fundamentally, our results provide evidence for a very close relation between intermediate financings and market financings and tend to reject the hypothesis of the Japanese financial system's convergence toward a capital market-based system.

JEL Classification: G10, G21, G32, G38.

Keywords: Disintermediation, financial system, intermediaries, capital markets.

La mesure de l'intermédiation financière au Japon

Résumé : Dans cet article, on mesure le taux d'intermédiation des financements au Japon au cours de la période 1970-2002 en utilisant des encours non-valorisés. On montre que ce taux est resté relativement stable, à un niveau proche de 85%. Ce maintien est cependant le résultat de deux évolutions opposées : une contraction de la part des crédits dans le financement externes et une progression de celle des achats de titres réalisés par les intermédiaires financiers bancaires et surtout non bancaires. Ces deux tendances opposées seraient masquées, voire déformées, si l'on s'en tenait aux indicateurs usuels qui se rapportent au PIB, qui retiennent une définition trop étroite de l'activité bancaire, ou qui utilisent des données en valeur de marché. Sur le fond, nos résultats soulignent, d'une part, l'imbrication croissante entre financements intermédiés et financements de marché et tendent à infirmer, d'autre part, l'idée d'une convergence du système financier japonais vers un système « orienté marché ».

Classification JEL : G10, G21, G32, G38.

Mots-clés : Désintermédiation, systèmes financiers, intermédiaires, marchés de capitaux.

The measurement of financial intermediation in Japan

1. Introduction

The Japanese financial system entered, at the beginning of the 1990s, a period of major transformations. As in many countries, deregulation was a driving force of this process. For Hoshi and Kashyap (1999), by the end of this process, the Japanese financial system will converge toward a capital market-based system that implies a decline of intermediation. Such an analysis is not specific to Japan, but is often applied to many other countries (see, for instance, Allen and Santomero, 2001 and Rajan and Zingales, 2003a). Three points are usually considered in this traditional approach.

The first one deals with the incidence of financial mutation on the relative importance of financial intermediaries compared to capital markets. A current view is that financial development goes against banks. Capital markets compete with banks on both sides of the bank's balance sheet. On the assets side, the increase in claims undermines the credit. On the liability side, the development of collective saving (which occurred relatively late in the case of Japan) increases the cost of resources collected by banks. As a consequence, traditional banking firms would decline and there would be a necessary redeployment towards other activities such as engineering, risk management, etc. (Boot and Thakor, 2000). In the specific case of Japan, the decline of traditional banking would also go with a weakening of the main banking relationship.

The second point relates to the global evolution of financial systems. Nowadays, the majority opinion puts forward the idea of a standardization of financial systems toward a capital market-based system, in opposition to a bank-based system. Interestingly, the only empirical study specifically dedicated to this phenomenon (Schmidt, Hackethal and Tyrell, 1999), finds neither a global trend toward disintermediation nor a convergence toward capital market-based financial systems in the major European economies (France, Germany or the United Kingdom) at a general level.

The third question concerns the relative merits of bank-based versus capital market-based systems (for a comprehensive discussion on comparative financial systems, see Allen and Gale, 2000, 2001 and Levine, 2002). For a long time, the literature has seemed to conclude in favor of capital market-based systems, at least for developed countries (Boyd and Smith, 1998). However, several recent studies using cross-country comparisons challenge this idea: although global financial development is a significant determinant of economic growth, there is no support for either the bank-based or market-based view (see Levine, 2005).

One major problem with this traditional approach is that financial structure is always challenging to quantify (see, for a discussion, Beck, Demirguc-Kunt and Levine, 2001). Consider, for instance, the Japanese case. While Japan is still referred to as an archetype of a bank-based system, Tokyo is one of the leading financial centers in the world; in 2003, Tokyo was ranked first for the market capitalization of newly listed domestic shares. Moreover, the Japanese corporate bond market is actually small, but the Japanese Government Bond (JGB) market is the largest in the world. At first, one can see the evidence of the convergence of the Japanese financial system toward a capital market-based system. But it seems more interesting to see the evidence of a close connection between banks and capital markets in the financial system.

Beyond the empirical problem, a more fundamental issue challenges the ground of the traditional approach. The traditional approach considers markets and intermediaries as two substitutable and opposite modalities. But one should not ignore the important interactions between markets and intermediaries: the services provided by each may overlap, and it is very likely that there is cross-fertilization between markets and intermediaries. In accordance with Levine (2005), we suggest

that the debate should not focus on bank-based versus market-based systems. By nature, the traditional approach cannot cover the variety of financial systems. Moreover, this dichotomous vision of financial systems is gradually being replaced by theoretical analyses that underline the complementary quality of financial services. For instance, Bodie and Merton (1995, 2004) are in favor of a functional approach instead of an institutional one; in this latter case, banks and capital markets are not opposed, but assume largely identical functions (financing, portfolio management, risk management, liquidity insurance) although in a different way. Moreover, numerous studies challenge the convergence hypothesis by highlighting the role of historical or institutional characteristics like the legal system, the political context, the cultural and religious legacies, the geographical endowments or the social capital that may shape national financial systems (see, again, Levine 2005). In any case, these conflicting analyses highlight the need for better empirical measures of financial structure.

In this paper, we compute financial intermediation ratios for Japan (1970-2003). At the methodological level, usually, financial intermediation ratios are mostly achieved through a flow or a stock basis. However, none of these is fully suitable: flows are too erratic for long-term studies, while stock valuations amplify financial cycles. Therefore, we use stock series, but book value instead of market value. That is particularly significant in the case of Japan, whose stock exchange market was affected these last decades by episodes of very strong volatility and bull and bear markets.

Our results suggest that the distribution of external financing between banks and the market has evolved less than the nature of the banks' participation in the financing of the Japanese economy. The financial intermediation ratio has remained stable overall between 1970 and 2003, because the relative share of the investments in claims carried out by banks and other financial intermediaries has progressed and has compensated for the reduction in the share of credit. On the other hand, the nature of the intermediate financings has changed: they are, for a growing portion of them, financings by claims. That means that market financings, for part of them, are "intermediate". That makes increasingly fuzzy the traditional distinction between intermediate financings and market financings. In this respect, our study offers new stylized facts concerning the Japanese financial system: the rise of the capital markets, which started at the beginning of the 1980's, did not involve a "disintermediation" and, symmetrically, the decline in the stock exchange, at the beginning of the 1990s and at the beginning of the 2000s, did not support a "re-intermediation" in Japan.

But the scope of our study goes beyond the case of Japan. Our results confirm those obtained for Europe (Capelle-Blancard and Couppey-Soubeyran, 2003) and support a more general assessment concerning the evolution of the financial systems. Because of the close connection between market financings and intermediate financings, the theoretical cleavage between the two is less and less suitable. To characterize the structures of financing and their evolution in time, the relevant typology should be centered on intermediate financings between credit and claims investment by financial intermediaries.

The paper is structured as follows: section 2 presents the data and defines the intermediation scope. Section 3 provides results. Section 4 concludes.

2. Methodology

2.1 Data

Financial national accounts of Japan (Flow of Funds Accounts) are downloaded from the Bank of Japan website. We use two databases: SNA 68 data base is available for 1970-1999 (quarterly

data), and SNA 93 data base ranges the period 1990-2003 (annual data until 1998, and quarterly data since). In spite of concordance problems that do appear, these two databases enable one to study the evolution of the financial system over a longer period. In Table 1, we present the financial sectors, the financial operations considered in this study, and the corresponding items in the SNA68 and SNA93 accounting system.

Table 1. Institutional sectors, financial assets and liabilities

Institutional sectors			**SNA 68**	**SNA 93**
Financial intermediaries (FI) without BoJ	**Banks**		Banks	Banks (domestically licensed banks, foreign-owned banks, financial institutions for agriculture, forestry, and fisheries, financial institutions for small businesses)
	Non-bank financial intermediaries	**Insurances & Pension Funds**	(Private) Insurances	Insurances + Pension Funds
		Other financial intermediaries	Trusts + Public financial institutions + Securities companies	Postal Saving + Collectively managed trusts + Other financial intermediaries + Financial auxiliaries (financial institutions other than intermediaries)
Domestic non-financial (DNF)	**Households**		Personal	Households
	Nonfinancial corp. (NFC)		Corporate business	Non-financial corporations
	General government (GOV)		Government	General government
Overseas			Overseas	Overseas
Fund-raising			**SNA68**	**SNA93**
Loans			Loans	Loans
Securities			Bonds, bills and commercial papers	Securities other than share
			Stocks	Share and other equities

2.2 Intermediation ratios

A financial intermediation ratio measures the share of intermediate financings in the total of the external financings granted to the domestic non-financial sector (DNF). The denominator of the ratio (total of the external financings) is obtained by adding banking credit and claims issued by the DNF. The numerator of the ratio (intermediate financings) has two components: the first one we call "*credit intermediation*", and it is the total of credits granted by banks; the second one we call "*market intermediation*", and it is the sum of claims issued by DNF *and* submitted by all FI (Banks, Insurances & Pension Funds, and Others Public or Private Financial Intermediaries).[1] The sum

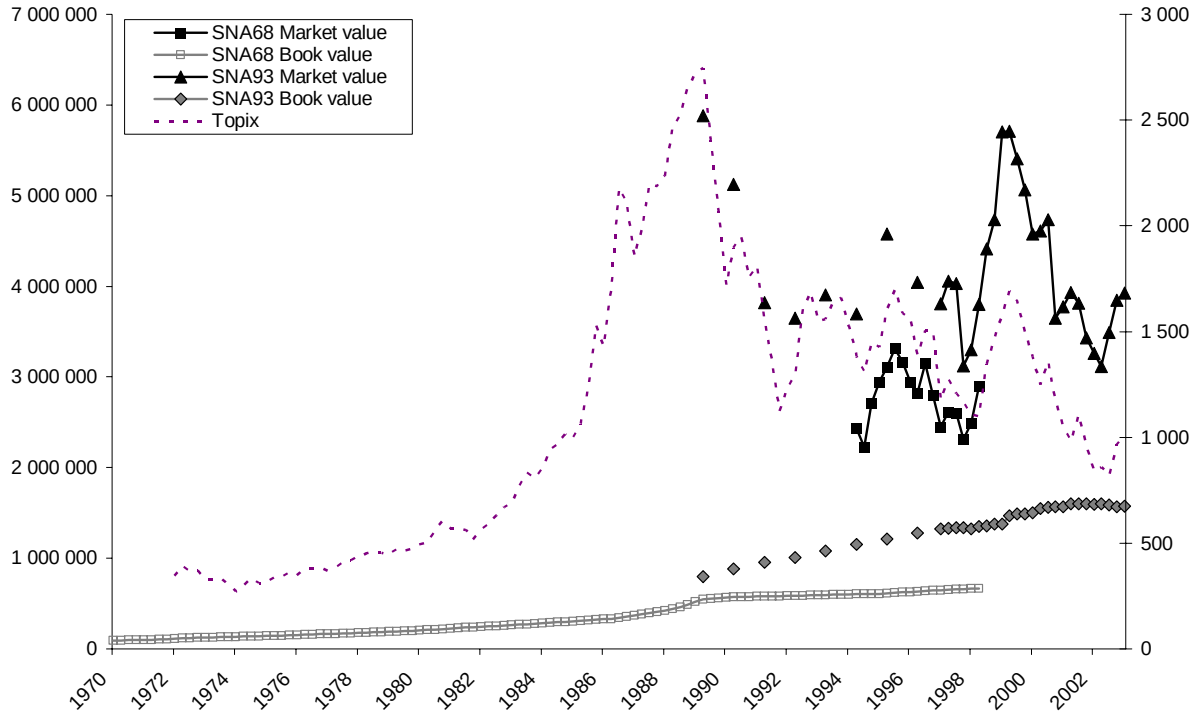
[1] Because broken down accounts are not available to identify the stocks of claims hold by FI over each sector (NFC, GOV and Overseas), we assume that the fraction of a given category of claims, issued by DNF and purchased by a given category of FI, is supposed to be equal to the fraction of the same category of claims held by the FI considered, whatever the issuer. If, for instance, insurance companies and pension funds hold α% of the total stocks of bonds, the hypothesis is made that they hold in the same manner α% of the stock of bonds issued by NFC, α% of

of these two components forms what we call *total intermediation*. Three intermediation ratios are computed: the credit intermediation ratio (or strict ratio), the market intermediation ratio, and the ratio of total intermediation (or large ratio as the sum of the two preceding ones). Each ratio can be expressed for the DNF sector, or for the two main institutional non-financial sectors: non-financial corporations (NFC) and general government (GOV). The market intermediation ratio can also be broken down by type of FI active in Japan, to measure the distribution of market share between "banks" and "non-bank FI".

2.3 Market value versus book value

In a general way, market value data (like market capitalization, for example) are not appropriate to evaluate the level of financings. Such data integrate particularly significant price effects which completely hide the evolution of the financings itself (quantities effects).[2] It was obvious in the case of Japan at the end of the 1980s and the 1990s (*cf.* Figure 1).

Figure 1. Outstanding amounts of stocks issued by Japanese corporations



Notes: Outstanding amounts of stocks on a market value and a book value basis (*source*: Flow of Funds Account – Bank of Japan, see Table 2) on the left scale and *Topix* Index (*source*: Datastream) on the right scale.

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those issued by GOV and α% of those issued by Overseas.

[2] Rajan and Zingales (2003b) also recognized that equity market capitalization "captures the amount of equity listed, not the amount of equity raised. Thus, the presence of few companies that have greatly appreciated in value can give the impression of a big equity market even when the amount of funds raised in the market is tiny. On the positive side, however, this measure is less cyclical than the previous one, and thus is better for making comparisons across countries and across time periods."

Stock exchange valuation can lead to significant bias:

- A rise in securities prices significantly weighs down the stock of claims without necessarily increasing external financings. It mechanically lowers the intermediation ratio. Accordingly, the progression of stock market capitalization is often perceived, wrongly, as the sign of direct finance rising and intermediation declining.
- The incidence is symmetrical in the case of decreasing securities prices. Indeed, on the other side, when stock market capitalization declines, the denominator of the ratio declines too. But depreciation effects should not be assimilated to a rebound of intermediate financings.

In short, increases in stock market prices lead to the overestimation of the relative importance of market financings and to the underestimation of intermediate financings. In both cases, one would err in not distinguishing between the two distinct tendencies that cause variation in stock market capitalization: on the one hand, an increase or decrease in the issuance of shares (volume effect) and, on the other hand, price appreciation or depreciation of the older shares (price effect).

When the intermediation ratio is computed with market values, it is impossible to distinguish between the "price effect" and the "volume effect". Therefore, in this study, intermediation ratios are calculated on a book value basis. Data from SNA68 are given in book value until 1994:4 and in market value since. Data (loans, bonds, and shares - both quoted and unquoted) from SNA93 are given in market value (see Table 2). To adopt a simple rule, we construct for stocks[3], a series estimated in book value by accumulation of flow data, whatever the period considered.[4] There is just one exception to the rule for the period 1997:4 to 2003:4. Indeed, for this period, the Bank of Japan provides detailed data of FFA with book value. Moreover, for the same period, we use also book value for data on loans.[5]

Table 2. Characteristics of the data

	SNA68	**SNA93**
Periods and frequencies	Quarterly: March 1970 to March 1998	Annually: FY1989 to FY 1997; Quarterly: March 1998 to December 2003 (P)
Initial stock data	1970-1994: book value ; 1994-1998: market value	market value
Sources of book value data	Accumulation of flow data	Accumulation of flow data and "detailed data of FFA" from Dec. 1997 to Dec. 2003 (P)

[3] Price effects also exist for bonds, but to a much lesser extent, so we limit the correction to stocks.

[4] To consider a sum of flows is required for long-term studies since flows series are too erratic. Note that another method is possible to neutralize the price effects. It consists in dividing stock market capitalization with a price index. The choice of a stock price index (it is for instance the approach chosen by Rousseau et Wachtel (2000) to adjust the indicators of financial development proposed by Levine et Zervos (1998) from price effects) poses problems of representativeness and does not allow one to take account of the valuation of non-listed shares. It is then preferable to determine a price index computed with flow and stocks data (see Capelle-Blancard and Couppey-Soubeyran, 2003).

[5] The Bank of Japan also provided a document concerning the Japanese channels of fund-raising for the period 1989FY to 2002FY. There are some differences with our own estimates. For loans, the difference is between -5.5% and -1.9%. Differences are higher for securities issued by the domestic non-financial sector and held by the financial sector: from -16% in 1989FY to -2% in 2002FY. That leads to a maximum difference of 4 and 7 points for the strict and the large intermediation ratios, respectively.

3. Results: Intermediation remains preponderant in Japan, but its nature is changing

3.1 Credit intermediation and market intermediation[6]

Between 1970 and 2000, external financings granted to the Japanese domestic non-financial sector were multiplied by 18 (see Figure 2). This increase was mostly favourable to securities issues. This part in the external financings has more than doubled, from 15% to 30%. In the same time, banking credits decreased from 76% to 58% and the proportion of shares and other equities has remained stable around 10%.

But it is necessary to underline the stability of the large ratio. It contrasts with the reduction of the strict ratio which is accentuated at the beginning of the 1990s (see Figure 3).[7] The two components of the large ratio, namely the strict ratio (banking credits as a fraction of external financings) and the market intermediation ratio (claims investments by the FI as a fraction of external financings) each follow a perfectly symmetrical trend. The more the strict ratio has dropped, at the beginning of the 1990s, the more the market intermediation ratio has increased. The rise of the market intermediation ratio translates the increasing share of the banking financial institutions and especially non-banking in the purchases of claims. In 1970 about half of the claims issued (10% of the 23% of external financings that they represented then) were acquired by the non-financial sector. It was just over one quarter in 1980. This fraction represented no more than one fifth between 1990 and 2000[8] (*see* Figure 4). In 2000, more than 70% of the market financings were actually intermediate financings (precisely 30% of the 42% of financings by issue of claims).

Thus, the intermediation degree of the financings has remained stable in Japan thanks to the increase in securities investments by the FI, compensating as such the fall bank credit. Market development did not reduce the share of the intermediate financings in the total of the external financings. But it changed the nature of the latter. Intermediate financings became more and more securities investments, therefore market financings. Intermediates financings and market financings appear increasingly integrated.

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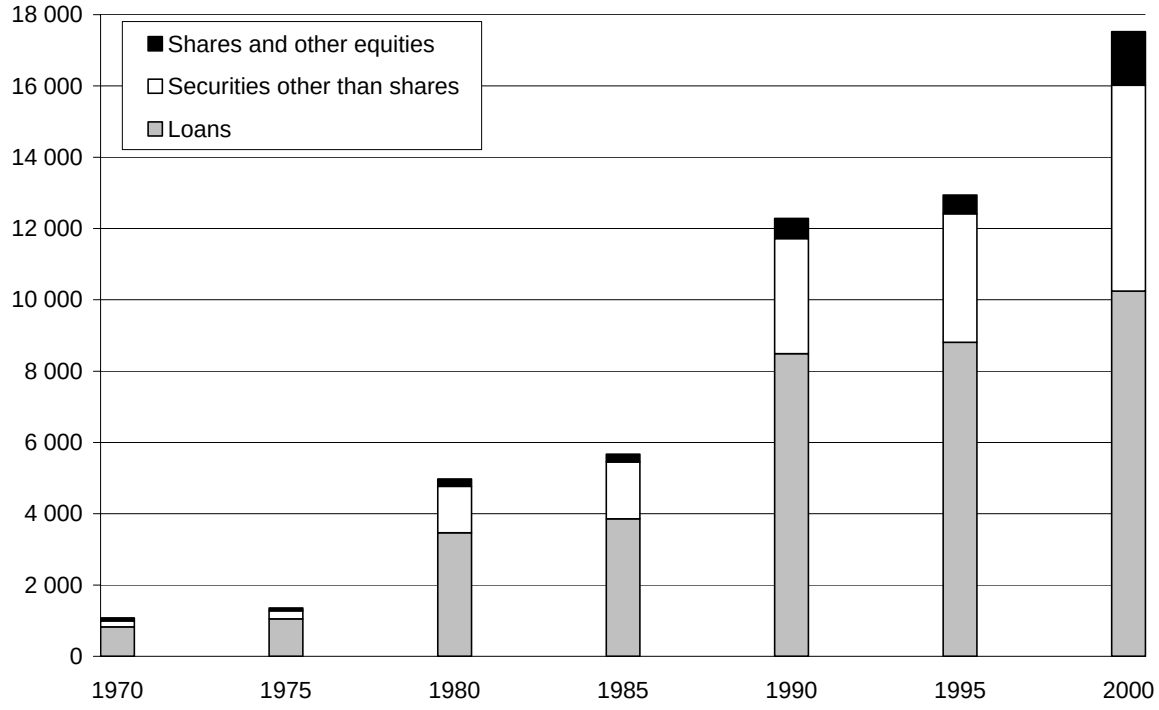
6 Detailed results are presented Table A in the Appendix.

7 There is, of course, a little difference between SNA 68 and SNA 95, but one notes that the trends are the same.

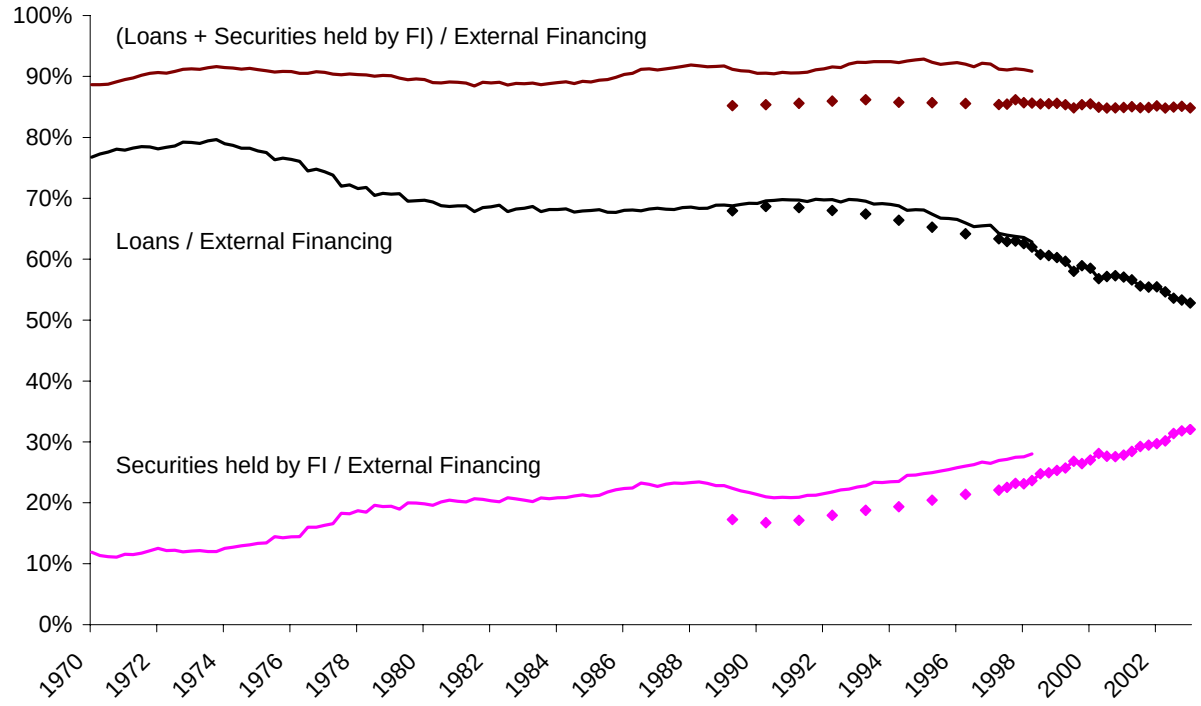
8 Data from 1970 to 1990 come from SNA 68 whereas those of 2000 come from SNA 93.

Figure 2. Japanese External Financing – Domestic Nonfinancial Sector



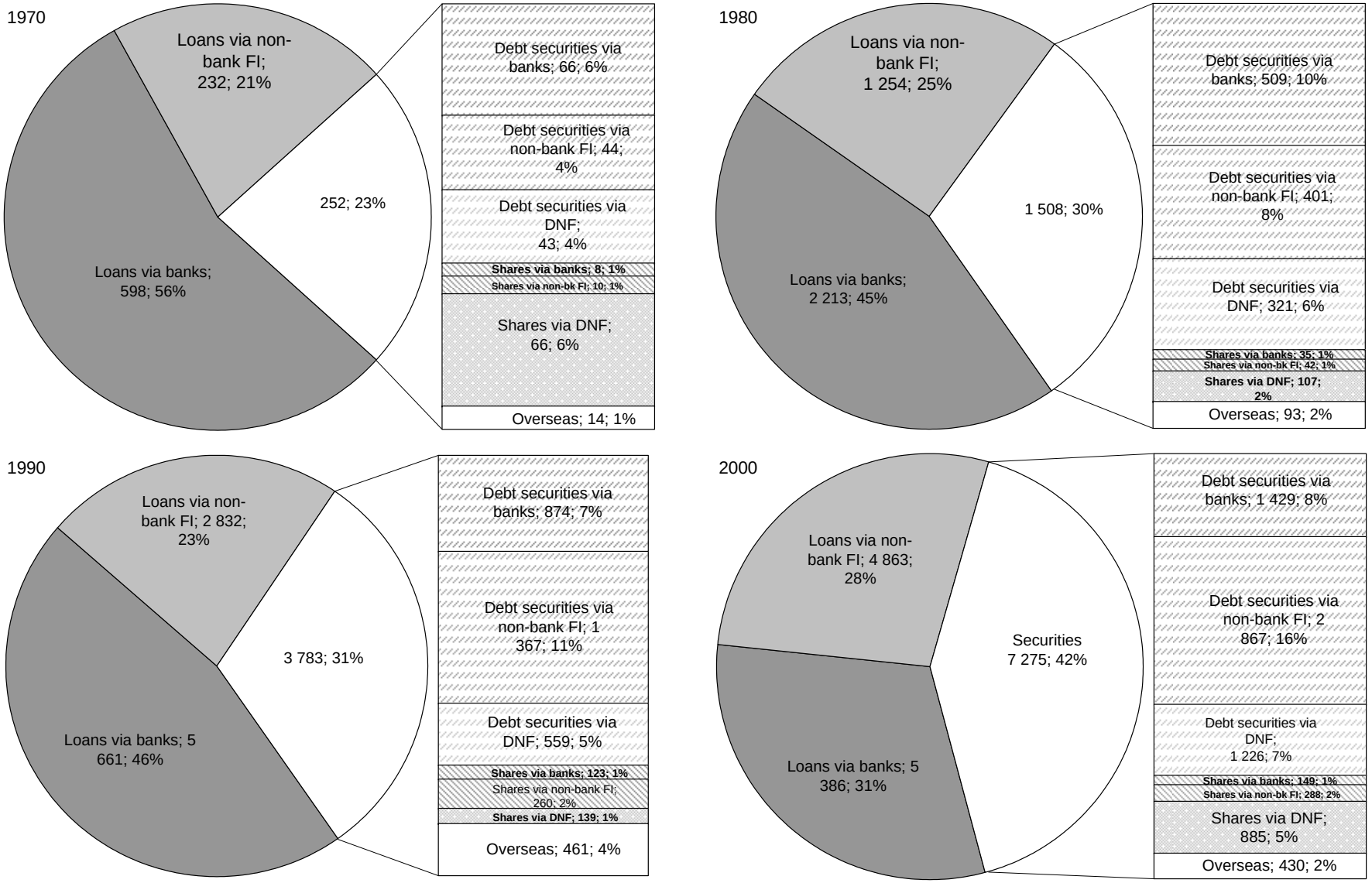
Data: Flow of Funds Account – Bank of Japan. Outstanding on a book value basis. SNA68 from 1970 to 1995 and SNA93 for 2000.

Figure 3. Japanese intermediation ratios – Domestic Non-financial Sector



Notes. From top to bottom: 1) Large intermediation ratio = (loans + securities held by financial intermediaries) / external financing; 2) Credit intermediation ratio = loans / external financing; 3) Market intermediation ratio = securities held by financial intermediaries / external financing. Data: Flow of Funds Account – Bank of Japan. Outstanding on a book value basis. SNA68 (solid line): quarterly data from 1970:4 to 1999:1 and SNA93 (dotted line): annual data from FY1989 to FY1997 and quarterly from 1998:1 to 2003:4.

Figure 4. Fund-raising by the Japanese domestic nonfinancial sector (100,000 JPY and %)



3.2 Intermediation ratio of institutional sectors

The ratios of institutional sectors are in accordance with the global ratio. Indeed, the intermediation ratio of funds raised by NFC and the ratio of funds raised by GOV have a common feature. In both cases, the share of credit in the external financing decreases, while the share of securities issuances (by both NFC and GOV) acquired by the FI increases.

For NFC (Figure 5a), the large intermediation ratio decreases slightly. The diminution is more relevant in the computation made with the SNA 93 database than in the one with the older SNA 68.[9] The strict ratio started to fall by the end of the 1980s and kept decreasing significantly from during the 1990s. Concurrently, the share of securities issued by NFC and acquired by FI increased from the end of 1980s. But it was not sufficient to compensate for the fall in bank credits. In consequence, the global ratio fell. However, one can note that the decrease in the global ratio does not exceed 10 points (between 1980 and 2000). This result casts doubt on the idea that the firms' dependence vis-à-vis bank financing or more widely intermediate financing would have appreciably decreased in Japan (Hoshi & Kashyap, 1999). Because of the close relation between market financings and intermediate financings, a securities issuance by a firm does not necessarily mean that this financing excludes banks or other financial intermediaries.

For GOV (Figure 5b), the global ratio was maintained at around 80%. It has even progressed if we consider calculations made with the SNA 93 database. This evolution can be explained by the increase in FI investments in claims issued by public firms. This fraction becomes greater and greater in external financings granted to GOV.

3.3 The intermediation ratio and stock exchange valuation

In Europe and in the United States, the 1990s were a period of a very dynamic stock markets, so much so that a speculative bubble formed and then burst at the beginning of the 2000s. Starting from computations in market values (of stock market capitalization, of credit over external financings, etc.), one would find in this context a disintermediation of financing. The explanation is that a measurement made from market value does not allow one to distinguish between the increase in the supply of stock of the market financings (stock effect) and the valorization effects (price effect). Therefore, by mechanically decreasing the relative share of the intermediate financings, stock exchange valorization masks the true evolution of the latter (a relative stability in the case of Europe, see Capelle-Blancard and Couppey-Soubeyran 2003).

[9] We checked that cross-shareholdings between Japanese NFCs do not affect our results. To do so, we computed net shares outstanding (assets minus liabilities of NFC shares). Intermediation ratios are, obviously, lower but results are qualitatively the same. Data are available on request.

Figure 5a. Japanese intermediation ratios – Domestic Non-financial Corporations

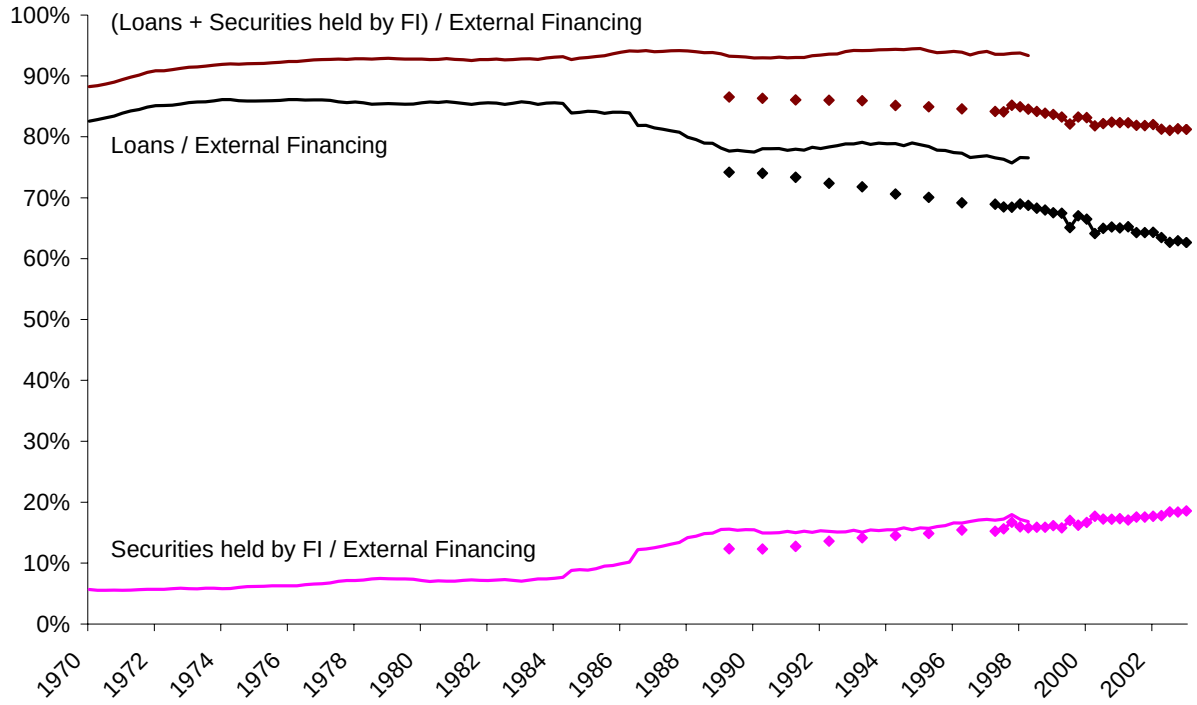
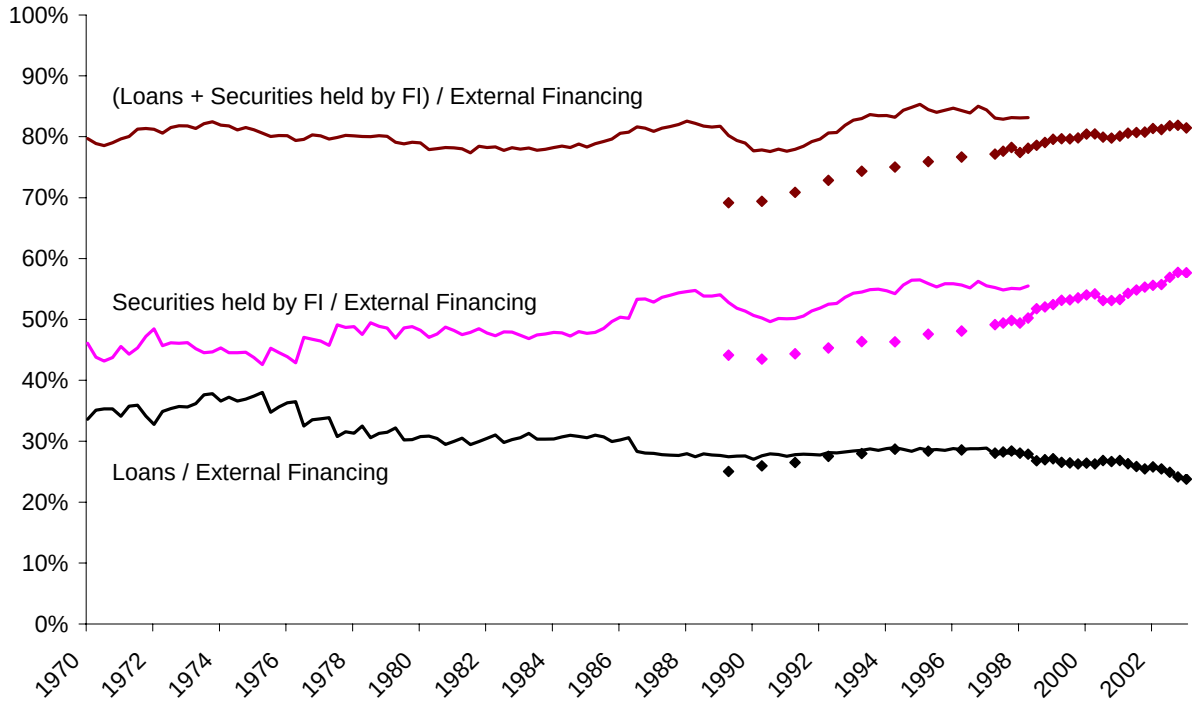


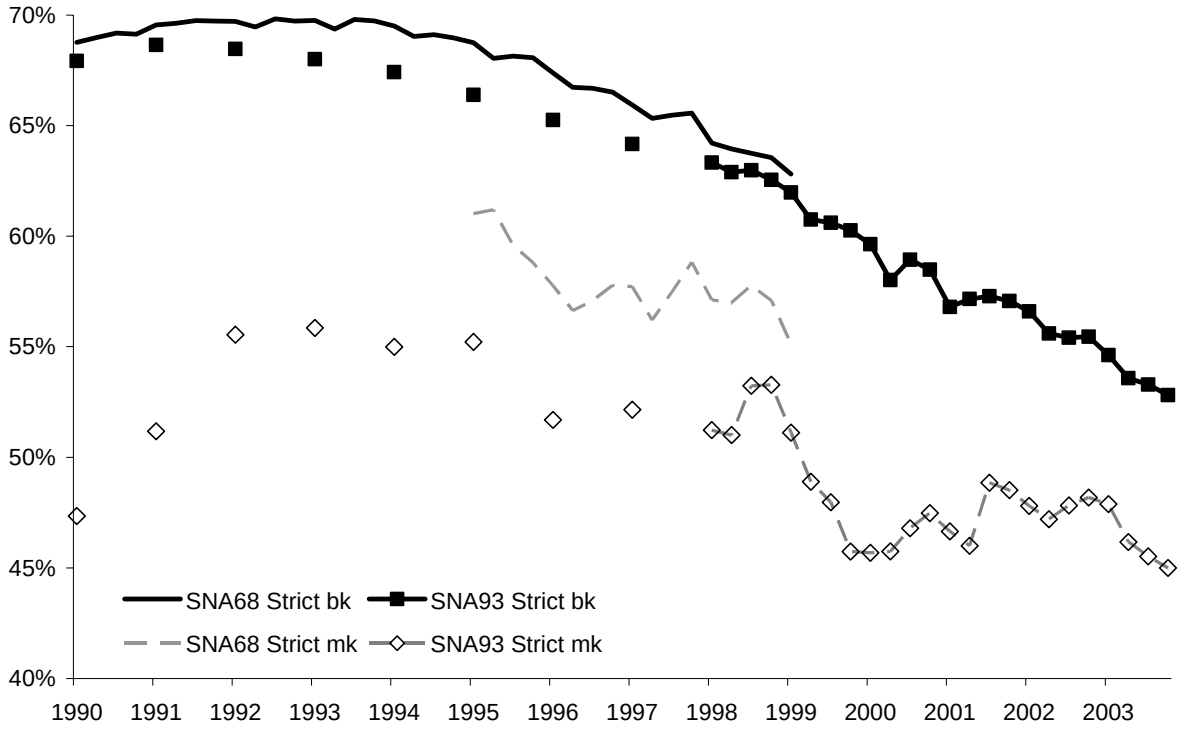
Figure 5b. Japanese intermediation ratios – General Government



Notes. Large intermediation ratio = (loans + securities held by financial intermediaries) / external financing; Credit intermediation ratio = loans / external financing; Market intermediation ratio = securities held by financial intermediaries / external financing. Data: Flow of Funds Account – Bank of Japan. Outstanding on a book value basis. SNA68 (solid line): quarterly data from 1970:4 to 1999:1 and SNA93 (dotted line): annual data from FY1989 to FY1997 and quarterly from 1998:1 to 2003:4.

In Japan, like everywhere else, the 1980s was marked by the Big Bang and many financial innovations, whereas the 1990s were a period of a huge financial crisis. An analysis based on market value during this later period would lead to the fallacious conclusion that intermediation rebounded. But the stock market crisis in Japan was not favorable to intermediation, as the expansion of capital markets at the same time in Europe did not involve the fall of intermediation. In Europe, the decrease in the intermediation ratios in market value, due to the stock price increase, has been assimilated wrongly to a disintermediation of financing. In Japan, stock price decrease (notably observed during 1990-1992 and 2000-2003) had hidden the contraction in intermediate financing consecutive to the banking crisis. Our aim is not only to draw attention to obvious differences in absolute levels between market value and book value or to the more erratic evolution of the market value, but also to emphasize the deformation of the tendencies. Contraction of bank credit (see Figure 6) is dissimulated if we are only to consider market value measurement during 2000-2003 (the market value ratio remains stable and the book value ratio decreases). The trend is even fully inversed during 1990-1992 (the market value ratio increases and the book value ratio remains stable). Finally, the global intermediation ratio has remained stable during the relevant period thanks to the increase of securities purchased by IF that has compensated for the contraction of bank credit.

Figure 6. Strict intermediation ratios with book or market data



Notes: Strict intermediation ratio = loans / external financing. SNA68: quarterly data from 1970:4 to 1999:1. SNA 93: annual data from FY1989 to FY1997 and quarterly from 1998:1 to 2003:4. Outstanding: on market (mk) and book (bk) value basis.

3.4 Intermediation ratios versus other indicators of the degree of financial intermediation

Many indicators are used to evaluate financial development or to measure the weight of financial and banking intermediation. There is no consensus about which one is the best. Therefore, it would be interesting to compare the measures we obtained in computing intermediation ratios to

those obtained by other. Edey and Hviding (1995), studying financial systems in the OECD countries during 1980-1990, use for instance: i) an indicator of the financial sector by dividing the total of securities issuances into the GDP; ii) a ratio of financial intermediation as a fraction of financial assets held by FI over the total of the financial assets held by all institutional sectors; iii) a ratio of banking intermediation as a fraction of financial assets held by banks over the financial assets of FI.[10] In the study of Rajan and Zingales (2003a), which deals with the changing character of European finance from the1980s, or in their other study (2003b) which concerns the evolution of the financial systems in about thirty countries (including Japan) during the twentieth century, three other indicators are notably used: iv) the ratio of bank loans to the private sector and GDP ; v) the ratio of commercial and savings bank deposits to GDP; vi) the ratio of stock market capitalization in Tokyo to GDP. A last indicator is sometimes used which, however, measures the dynamics of capital markets more than financial development itself: vii) the value of share trading, that is the total amount of transactions (Domestic & Foreign, including Investment Funds) in Tokyo and Osaka divided by GDP.[11] Finally, if we add to this list the three ratios we have computed in our study (the credit intermediation ratio, the market intermediation ratio, the large intermediation ratio), ten indicators can be compared (*see* Table 3).[12]

The comparison of these various indicators calls for several observations:

- *All these indicators do not say anything about the financing structure,* especially when they are fractions of GDP. Most of them inform only of the evolution in the absolute level (dividing by GDP only allows standard sizes) of the intermediation and not about the possible structural deformation of the financing. The fraction of deposits or bank loans over the GDP is an indicator that better measures the dynamism of these two traditional banking activities than the relative importance of the banks compared to the capital markets in financing. In this respect, only measurements as fractions of intermediate financings (properly defined) to external financings (like those we computed) can be really called *intermediation ratios*.
- *These indicators give a more or less broad vision of intermediation*. Indicators like fraction of loans or deposits to GDP (4 and 5) give a narrow vision of intermediation, as the one that prevails in the strict intermediation ratio (1a). In dividing the securities portfolio of FI by those of all resident sectors (2) or by dividing the banks portfolio by those of all FI (3), one measures the relative contribution of the FI or of the banks to market financings (and not to the whole of the external financings) obtained by domestic non financial or financial agents (and not only domestic by non financial agents). Therefore (2) and (3) do not measure as do (1a), (1b) and (1c) the share of the intermediate financings in the total of the external financings granted by DNF. Among all these indicators, only the large intermediation ratio offers a precise measurement of the weight of the banks (considered at the same time in their traditional activity of credit and their activity of claims investment) and other FI in the external financing of the DNF.
- *All these indicators do not capture the changing nature of intermediation*. Indicators (4) and (5) seem to provide empirical evidence for the dynamism, or even the regular growth of the traditional banking activities (credits and deposits). This, to say the least, is rather paradoxical looking at

[10] Allen and Santomero (2001) use also such indicators.

[11] The ratio of the number of domestic companies whose equity is publicly traded in Tokyo and Osaka and the country's population in millions varies between 23.39 in 1990 and 26.21 in 2003 (*source*: FIBV). The ratio of funds raised through public equity offerings (both initial public offerings and seasoned equity issues) by domestic companies to gross fixed capital formation cannot be computed because required data are not available for Japan in the FIBV database.

[12] Results presented in the table are quite different from those obtained by Edey and Hviding (1995) and Rajan and Zingales (2003b). Edey and Hviding (1995) use the OECD database. Rajan and Zingales (2003b) use data from Mitchell (1995): deposits and national income are extrapolated to 1999 for deposits by using the growth rate of deposits from the IMF's International Financial Statistics.

the analyses that stress the gravity of the banking crisis in Japan during 1990-2000. The breakdown of the total intermediation ratio (1c) into a credit intermediation ratio (1a) and a market intermediation ratio (1b), computed from book value data, more finely shows the contraction of credit and the correction enabled by the increase in market intermediation.

- One notes *the erratic evolution of the indicators which integrate stock market data* and which are particularly sensitive to changes in securities prices. These indicators (7 and 8) have to be interpreted with prudence because they provide an erratic measure of financial development. Moreover, these indicators are not exclusive of those referring to intermediation. In other words, the evolution of intermediation cannot be inferred by the evolution of the stock price index or, more broadly, of market activity.

Table 4. Various Indicators of the Japanese Financial System

	Data source	**1970**	**1980**	**1990**	**2000**
1a) Credit intermediation ratio	BoJ	77%	70%	68%	58%
1b) Market intermediation ratio	BoJ	12%	20%	17%	27%
1c) Large intermediation ratio	BoJ	89%	89%	85%	85%
2) Financial assets of FI/financial assets of all domestic sector	BoJ	52%	60%	47%	60%
3) Financial assets of banking sector/financial assets of FI	BoJ	49%	48%	34%	31%
4) Deposits/GDP	IFS	67%	78%	104%	111%
5) Bank Loan to Private Sector/GDP	IFS	77%	83%	119%	113%
6) Securities issued by DNF/GDP	BoJ, IFS	97%	196%	267%	540%
7) Stock market capitalization/GDP	FIBV, IFS	_	_	89%	71%
8) Value of share trading/GDP	FIBV, IFS	_	_	47%	59%

Notes: Credit intermediation ratio = loans / external financing; Market intermediation ratio = securities held by financial intermediaries / external financing; Large intermediation ratio = Credit intermediation ratio + Market intermediation ratio. BoJ: SNA 68 for 1970 and 1980; SNA 93 for 1990 and 2000. Bank loan to the private sector is the ratio of claims on private sector of deposit money banks (IFS line 22d) and GDP (IFS line 99b). Deposits over GDP is the ratio of demand, time and savings deposits of deposit money banks (IFS lines 24, 25) and GDP. Stock market capitalization to GDP is the aggregate market value of equity of domestic companies listed on the Tokyo Stock Exchange (FIBV) divided by GDP. Value of share trading is the total amount of transactions (Domestic & Foreign, including Investment Funds) in Tokyo and Osaka divided by GDP. The financial intermediation ratio is the ratio of financial assets of financial institutions (including banks) to financial assets of all domestic sectors. The bank intermediation ratio is the ratio of assets of the banking sector to assets of all financial institutions.

4. Conclusion

According to our results, the intermediation ratio has remained quite stable, at around 85%. However, this stability is the result of two opposite trends: a contraction of credits and an increase in financial securities owned by financial (mostly, non banking) institutions. These two opposite trends would not have appeared if we had used market value data. Indeed, in this case, one would show in periods of a strong fall of the Japanese stock market (early 1990s and early 2000s) an increasing (actually artificial) intermediation ratio. Similarly, a computation using market value would have emphasized an artificial disintermediation during the sharp rise in the Japanese stock market from 1980 to 1990.

At the methodological level, one of the principal general results of this study is that the measurement of intermediation ratios must be done on the basis of stocks (more adapted than flows to the analyses of long periods) corrected for stock market valuation. In this respect, a generalization of accounting standards concerning market value will make the measurement of the financings structures even more delicate, or in any case a treatment of the data would have to be systematic. Moreover, the measurement of the financial system structure must be made with intermediation ratios that precisely measure the fraction of intermediate financings over external financings offered to DNF. Other ratios of financials assets or banking activity ratios as a fraction of GDP measure the dynamism of the banks or other FI better than their relative importance in the financial system.

Finally, on a theoretical level, by showing that intermediation financing increasingly consists in the purchasing of claims by IF, our study confirms the close connection between market financings and intermediate financings. Notions traditionally used to analyze the evolution of financial systems thus appear less and less operational. It is particularly relevant with regard to the distinction between market (or direct) financing and intermediate (or indirect) financing, and that between a *bank-based system* and a *capital market-based system*. Market financings are to a large extent intermediate financings and the orientation of the financial systems is basically mixed.

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APPENDIX

Table A: Japanese financial intermediation ratios

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
External financing	1,082	1,119	1,165	1,219	1,304	1,352	1,399	1,482	1,601	1,678	4,976	5,103	5,230	5,361	5,559	5,670	5,805
Loans	76.74	77.91	78.11	79.17	78.95	77.77	76.37	74.34	71.59	70.69	69.66	68.76	68.60	68.37	68.18	68.00	68.02
Loans via Banks	55.27	56.18	56.95	57.55	56.17	54.03	51.92	50.07	47.80	46.11	44.47	43.56	43.38	43.21	43.52	43.98	44.81
Loans via Non-Bank Financial Intermediaries	21.47	21.73	21.16	21.62	22.78	23.74	24.45	24.27	23.79	24.58	25.20	25.21	25.22	25.16	24.66	24.02	23.21
Securities other than share	14.70	14.35	14.82	14.30	15.01	16.64	18.52	20.86	23.92	25.03	26.22	27.17	27.37	27.74	27.94	28.15	28.15
via Banks	6.11	5.82	6.10	5.70	5.92	6.75	7.79	8.55	10.00	10.43	10.22	10.30	9.70	9.20	8.78	8.39	8.18
via Insurances & Pension Funds	0.34	0.27	0.27	0.26	0.32	0.40	0.51	0.69	0.94	1.08	1.08	1.14	1.24	1.30	1.35	1.37	1.56
via Other Financial Intermediaries	3.75	3.84	4.32	4.29	4.50	4.48	4.46	5.38	6.06	6.25	6.97	7.28	7.86	8.44	9.09	9.59	10.57
via Domestic Nonfinancial sector	3.97	3.93	3.70	3.72	3.93	4.46	5.00	5.27	5.77	6.06	6.46	6.99	6.91	7.08	6.90	6.67	5.70
via Overseas	0.51	0.49	0.43	0.32	0.35	0.54	0.75	0.96	1.13	1.18	1.46	1.44	1.61	1.67	1.75	2.04	2.04
Share and other equities	8.56	7.75	7.07	6.53	6.04	5.59	5.10	4.80	4.48	4.29	4.11	4.06	4.02	3.89	3.89	3.86	3.82
via Banks	0.73	0.72	0.83	0.84	0.81	0.75	0.70	0.70	0.68	0.72	0.71	0.72	0.72	0.69	0.72	0.73	0.68
via Insurances & Pension Funds	0.68	0.66	0.71	0.72	0.70	0.67	0.64	0.66	0.64	0.64	0.60	0.59	0.59	0.55	0.55	0.56	0.57
via Other Financial Intermediaries	0.27	0.27	0.30	0.28	0.28	0.30	0.32	0.34	0.37	0.32	0.24	0.24	0.22	0.24	0.34	0.46	0.77
via Domestic Nonfinancial sector	6.13	5.46	4.67	4.38	4.10	3.61	3.17	2.96	2.60	2.41	2.15	1.98	1.93	1.61	1.54	1.42	1.11
via Overseas	0.74	0.63	0.56	0.32	0.16	0.26	0.27	0.15	0.19	0.19	0.41	0.54	0.56	0.80	0.73	0.69	0.69
Large intermediation ratio	88.63	89.47	90.64	91.26	91.46	91.12	90.79	90.65	90.29	90.12	89.49	89.01	88.94	88.79	89.00	89.09	90.35
Market Intermediation ratio	11.89	11.57	12.53	12.09	12.51	13.34	14.41	16.31	18.70	19.43	19.83	20.25	20.34	20.42	20.83	21.09	22.33

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
External financing	5,916	6,118	6,250	12,286	12,406	12,549	12,662	12,864	12,942	13,081	13,157	13,369	13,466	17,525	17,295	17,710	17,691
Loans	68.36	68.57	68.89	69.13	69.73	69.73	69.74	68.97	68.07	66.52	65.57	62.55	60.27	58.48	57.07	55.46	52.81
Loans via Banks	45.40	45.72	45.98	46.08	46.05	45.23	44.32	42.89	42.14	40.75	40.11	33.73	31.23	30.73	29.86	28.84	27.11
Loans via Non-Bank Financial Intermediaries	22.96	22.84	22.91	23.05	23.68	24.50	25.41	26.09	25.93	25.77	25.47	28.82	29.04	27.75	27.22	26.61	25.70
Securities other than share	27.72	27.31	26.48	26.27	25.78	25.91	25.99	26.85	27.84	29.40	30.31	29.60	31.66	32.94	34.08	35.55	38.40
via Banks	8.03	8.20	7.86	7.11	6.30	6.29	6.37	6.28	6.23	5.99	5.81	5.78	6.98	8.16	8.15	8.70	10.31
via Insurances & Pension Funds	1.52	1.61	1.48	1.35	1.40	1.64	2.00	2.61	3.27	3.43	3.63	6.53	7.15	7.56	8.18	8.94	9.37
via Other Financial Intermediaries	10.81	10.89	10.45	9.77	10.12	10.67	11.35	11.74	12.60	13.66	14.23	8.28	9.00	8.80	8.81	9.40	9.78
via Domestic Nonfinancial sector	4.99	4.42	3.92	4.55	4.22	3.88	3.25	3.42	3.63	3.55	3.47	7.27	7.24	7.00	7.54	7.28	7.75
via Overseas	2.27	2.09	2.69	3.40	3.66	3.37	2.96	2.73	2.34	2.71	3.14	1.74	1.28	1.42	1.39	1.23	1.19
Share and other equities	3.92	4.12	4.62	4.60	4.50	4.36	4.27	4.18	4.09	4.08	4.12	7.85	8.08	8.58	8.85	8.99	8.79
via Banks	0.67	0.74	0.86	1.00	1.02	1.03	0.99	0.99	1.00	0.99	1.05	0.92	0.79	0.85	0.84	0.79	0.82
via Insurances & Pension Funds	0.61	0.68	0.75	0.87	0.93	0.95	0.93	0.89	0.82	0.80	0.80	1.09	0.87	0.94	1.01	0.97	0.91
via Other Financial Intermediaries	1.07	1.20	1.44	1.24	1.09	0.94	0.97	0.94	0.88	0.90	0.96	0.53	0.55	0.71	0.85	0.91	0.84
via Domestic Nonfinancial sector	1.20	1.07	1.02	1.13	0.99	0.97	0.82	0.68	0.62	0.52	0.51	4.62	4.75	5.05	5.14	5.35	5.09
via Overseas	0.37	0.44	0.57	0.35	0.48	0.47	0.56	0.68	0.79	0.89	0.81	0.69	1.12	1.03	1.01	0.98	1.13
Large intermediation ratio	91.06	91.88	91.72	90.49	90.58	91.25	92.35	92.42	92.87	92.28	92.05	85.69	85.60	85.50	84.91	85.16	84.84
Market Intermediation ratio	22.71	23.32	22.83	21.36	20.85	21.52	22.61	23.45	24.80	25.76	26.48	23.14	25.33	27.01	27.84	29.70	32.03

Notes: Credit intermediation ratio = loans / external financing; Market intermediation ratio = securities hold by financial intermediaries / external financing; Large intermediation ratio = Credit intermediation ratio + Market intermediation ratio. Data: Flow of Funds Account – Bank of Japan. Outstanding on a book value basis. SNA68 from 1970 to 1997 and SNA93 1998 to 2003. Units: External financing × JPY 100,000 millions or % of external financing. Quarterly results available on request.

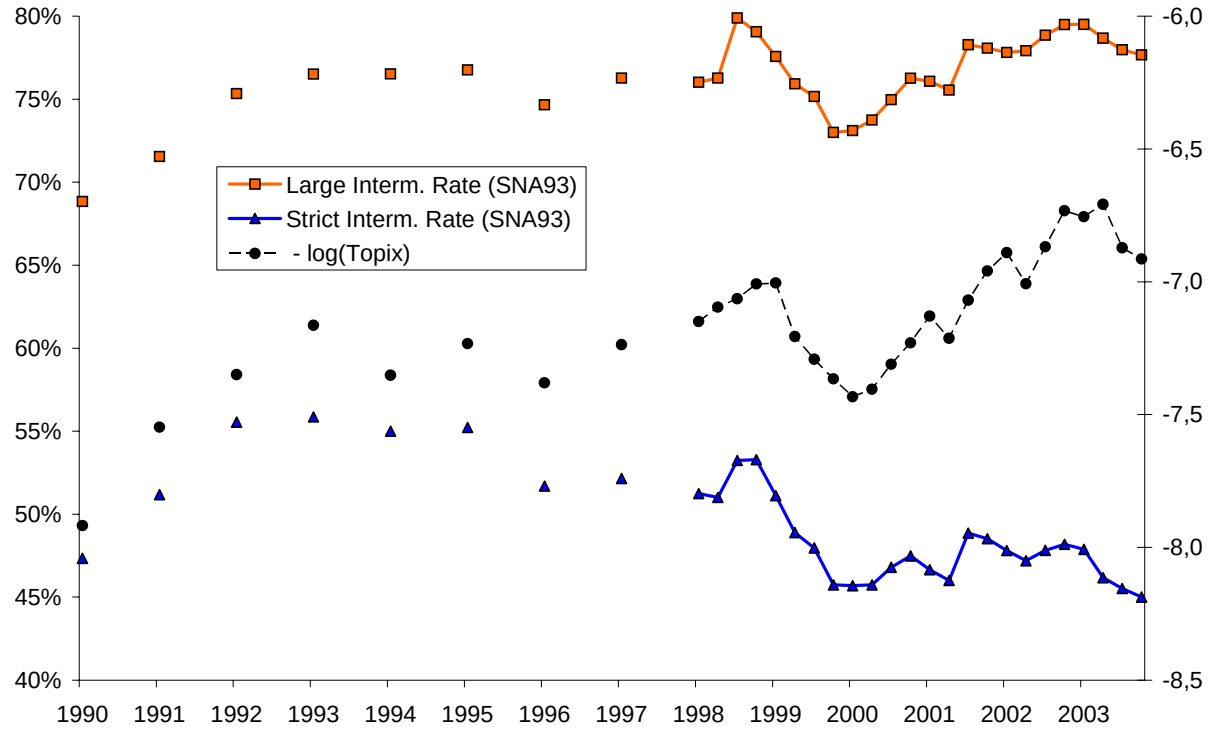
ADDITIONAL APPENDIX

The biggest capital markets in the world in 2003

Market capitalization [a]		Market capitalization of domestic shares newly listed		Value of share trading - domestic companies	
NYSE	11,328,953	Tokyo	75,659	NYSE	8,778,301
Tokyo	2,953,098	NYSE	70,709	Nasdaq	6,703,349
Nasdaq	2,844,193	Korea	67,467	London	2,143,317
London	2,460,064	Borsa Italiana	42,462	Tokyo	2,092,141
Euronext	2,076,410	London	37,173	Euronext	1,911,185
Deutsche Börse	1,079,026	Nasdaq	31,663	Deutsche Börse	1,200,895
Value of private bonds listed [b]		**Value of public bonds listed**			
London	823,632	Osaka	4,422,407		
Copenhagen	305,432	Borsa Italia	1,340,755		
Korea	297,676	NYSE	1,005,000		
Wiener Börse	294,030	London	464,162		
NYSE	228,000	India	252,529		
Luxembourg	131,556	Korea	212,013		

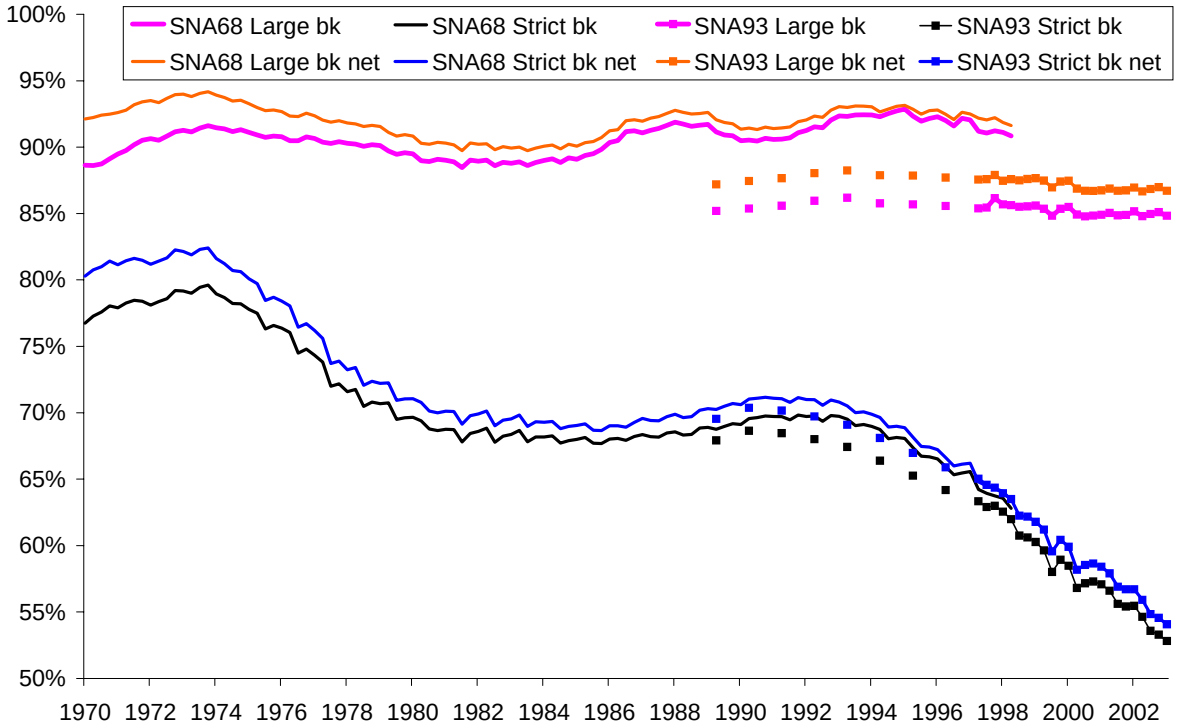
Source: World Federation of Exchange. USD millions converted with average year exchange rates. [a] The others stock markets have a market capitalization and a value of share trading for domestic companies below USD 1,000,000 millions. [b] Data for Deutsche Börse and Euronext are not available.

Figure A1. Japanese market intermediation ratios on a market value basis and stock index



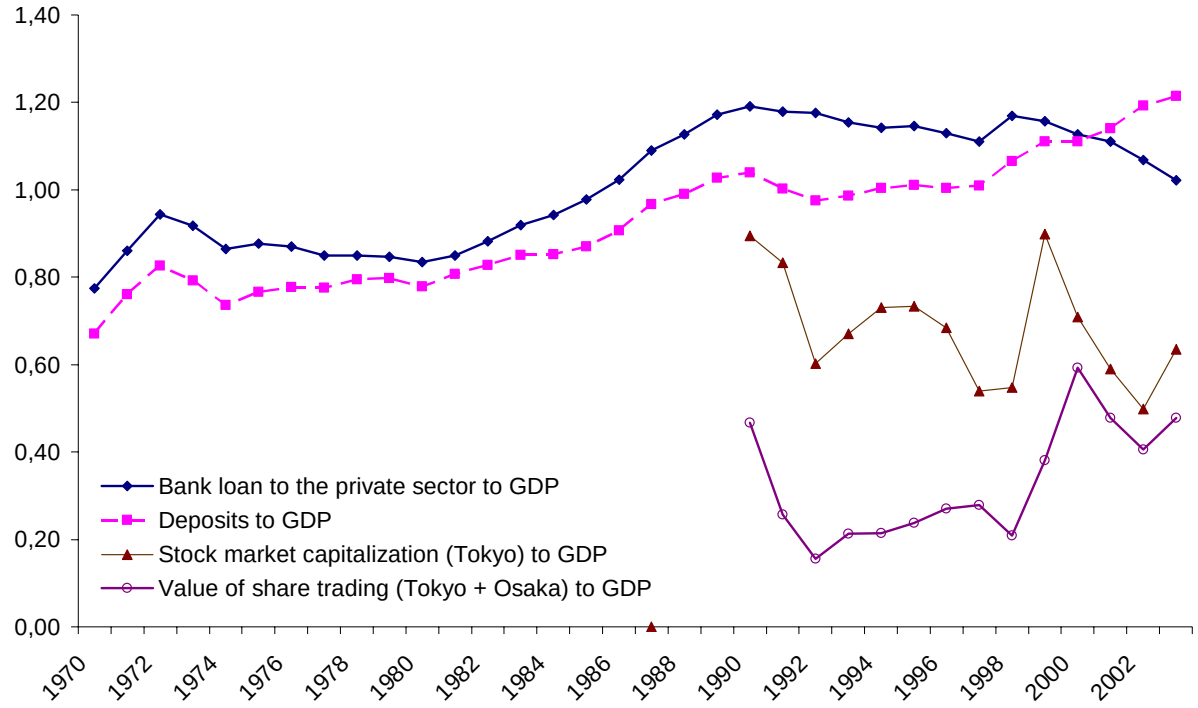
Notes: Large intermediation ratio = (loans + securities hold by financial intermediairies) / external financing. Strict intermediation ratio = loans / external financing. Outstanding on a market value basis.

Figure A2. Gross *versus* net data



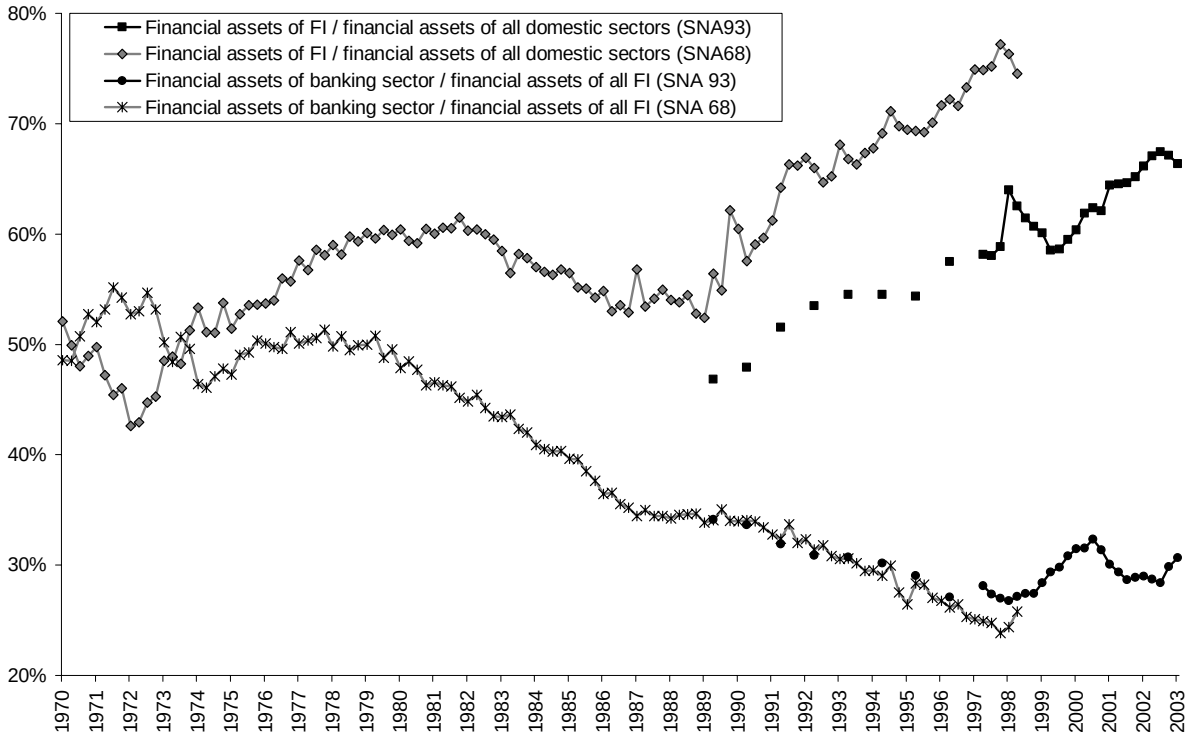
Notes: Large intermediation ratio = (loans + securities hold by financial intermediairies) / external financing. Strict intermediation ratio = loans / external financing. SNA68: quarterly data from 1970:4 to 1999:1. SNA 93: annual data from FY1989 to FY1997 and quarterly from 1998:1 to 2003:4. Outstanding on a book value basis.

Figure A3. Evolution of different indicators of financial development in Japan



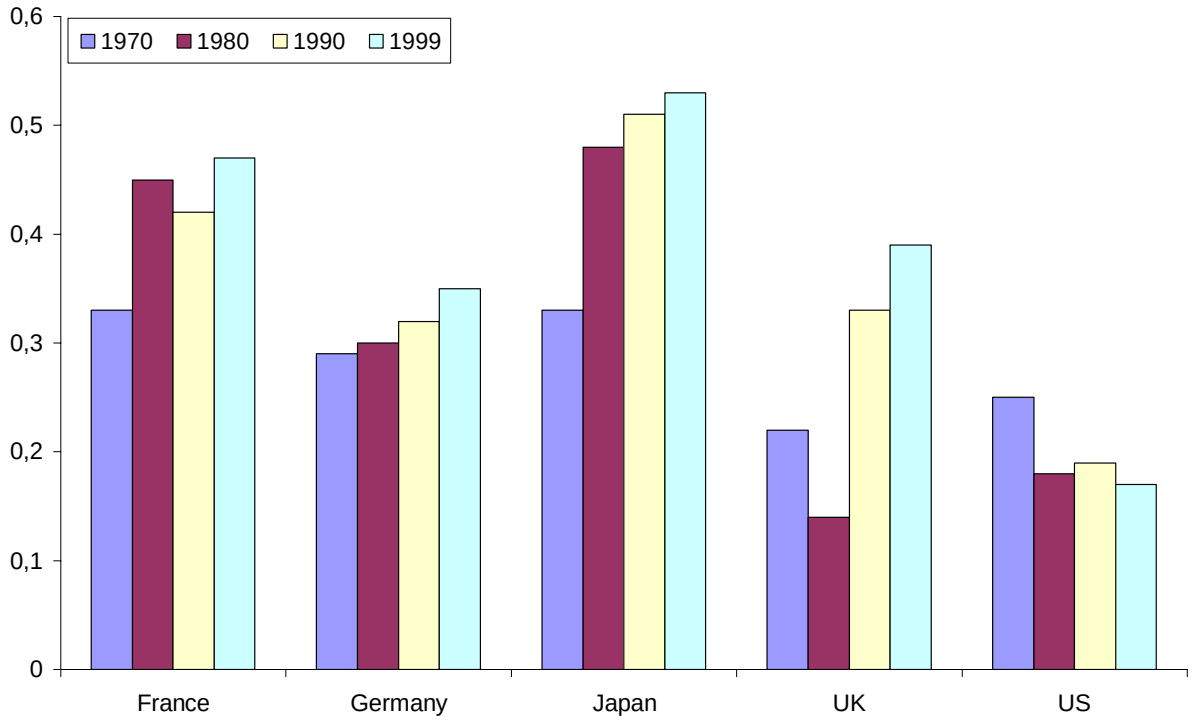
Notes. Bank loan to the private sector is the ratio of claims on private sector of deposit money banks (IFS line 22d) and GDP (IFS line 99b). Deposits to GDP is the ratio of demand, time and savings deposits of deposit money banks (IFS lines 24, 25) and GDP. Stock market capitalization to GDP is the aggregate market value of equity of domestic companies listed on the Tokyo Stock Exchange (FIBV) divided by GDP. Value of share trading is the total amount of transactions (Domestic & Foreign, including Investment Funds) in Tokyo and Osaka divided by GDP.

Figure A4. Evolution of Japanese financial assets ratios



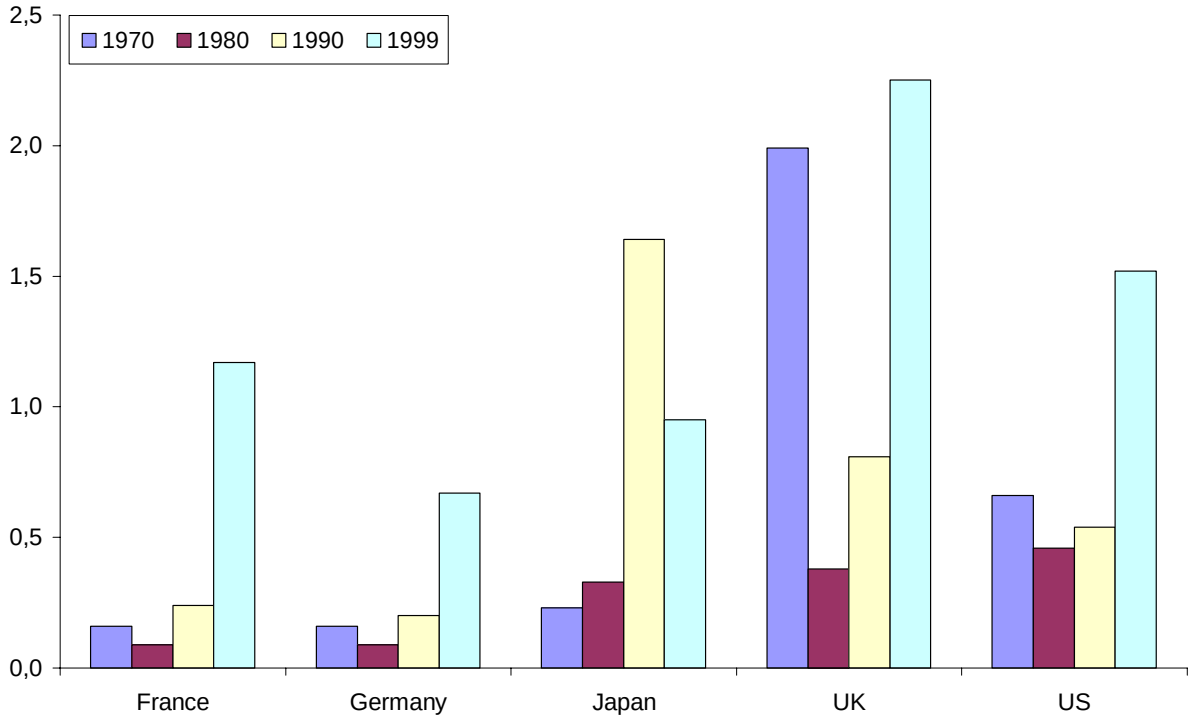
Data: Flow of Funds Account – Bank of Japan. Outstanding on a market value basis.

Figure A5. Evolution of the ratio of deposits to GDP



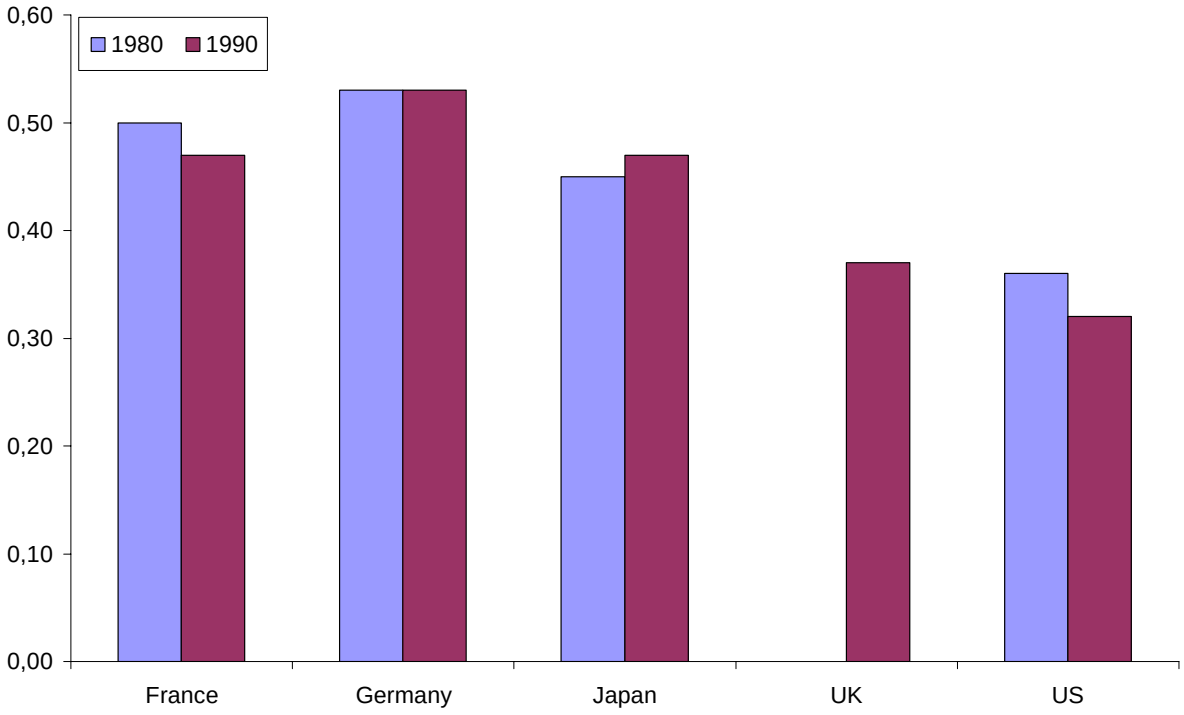
Notes. Deposits to GDP is the ratio of commercial and savings deposits divided by GDP. Source: Rajan and Zingales (2003).

Figure A6. Evolution of stock market capitalization over GDP



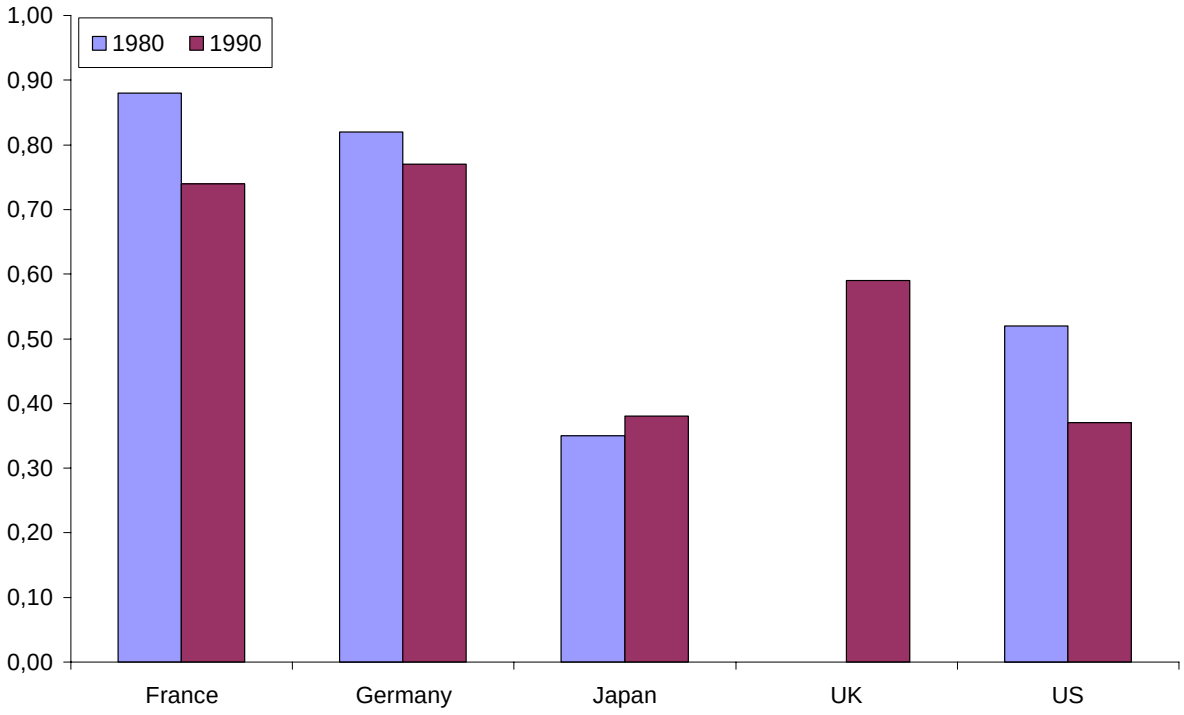
Notes. Stock market capitalization to GDP is the ratio of the aggregate market value of equity of domestic companies to GDP. Source: Rajan and Zingales (2003).

Figure A7. Evolution of financial intermediation ratio



Notes. Financial intermediation ratio is the ratio of financial assets of financial institutions (including banks) to financial assets of all domestic. Source: Edey et Hviding (1995), OECD Financial Accounts.

Figure A8. Evolution of bank intermediation ratio



Notes. Bank intermediation ratio is the Ratio of assets of banking sector to assets of all financial institutions. Source: Edey et Hviding (1995), OECD Financial Accounts.